

Discovery of a large population of Rye Beetle Grass *Tripogon loliiformis* on the volcanic plains west of Melbourne, with observations on ecology and propagation

Rye Beetle Grass *Tripogon loliiformis* (F. Muell) C.E.Hubb is a tiny, warm season grass that commonly grows to only 4 cm high, with a flowering culm to 15 cm. Current records in Victoria suggest that the species is scattered and rare throughout dry, rocky areas of the state including on the basalt plains just west of Melbourne and on sedimentary formations at Mt Arapiles, the Strathbogie Ranges, Wangaratta and Suggan Buggan (Walsh and Entwistle 1992). The species also grows on shallow granite soils at Terrick Terrick National Park (pers. obs.). The species occurs in all mainland states of Australia. Rye Beetle Grass is one of few 'resurrection' plants indigenous to Victoria which has the ability to rehydrate its foliage rapidly following sufficient rain.

Ecology

On the basalt plains west of Melbourne, Rye Beetle Grass is restricted largely to shallow (<7 cm) soil platforms overlying basalt rocks. These sites have a relatively open vegetation cover, as larger plant species appear unable to grow on the shallow, rocky soils. The platforms are occupied only by species whose life strategies allow them to cope with the harsh habitat conditions, and includes a range of mosses (which are able to dry and rehydrate in response to wetting and drying cycles) and annual herbs (which grow and seed in response to rain and die off as hotter conditions return). Rye Beetle Grass has evolved to grow in these conditions by adapting a life cycle that is very much akin to that of a bryophyte. Following dry conditions the leaves may shrivel and become inactive, but within days of rain they rehydrate and turn green.

The species' response to fire is largely unknown. The open cover and lack of vegetation cover characteristic of the species' habitat is likely to minimise fire intensity around plants. However, Bainbridge (unpublished data) noted that grass slash left around plants prior to a burn is likely to pose a threat by increasing fire intensity. A spring burn undertaken at the

Mt Ridley Grasslands appeared to have no detrimental effect on a Rye Beetle Grass population, whilst the species was found to be present in high numbers at Pioneer Park in Sydenham where several recent burns had been conducted (pers. obs.). The species is unlikely to be out-competed by over-growth of *Themeda* tussocks due to its specialised habitat niche. Stock grazing appears to have a negative effect on Rye Beetle Grass patches, as the shallow soils are easily compacted and plants tend to be trampled.

Discovery of a large population

On 28 October 2008, staff members of Applied Botany and Zoology Ecological Consulting (ABZECO) visited a large parcel of land in Deer Park, west of Melbourne, to undertake salvage of significant flora species. This land parcel, although supporting a high diversity of Victorian and Australian threatened flora, fauna and vegetation communities (including Striped Legless Lizard, Spiny Rice Flower and Small Scurf-pea), had been approved to be destroyed and developed for residential and industrial purposes. Most of the site had never been cultivated but had been grazed by stock for many years (Richard Francis pers. comm. October 2008).

Previous assessments had located one patch of Rye Beetle Grass within the site. On inspection of the site by ABZECO staff, it was discovered that an unusually large population was present. Such large quantities were discovered that several more site visits had to be organised to salvage the majority of plants. Approximately 1500 plants of Rye Beetle Grass, scattered across at least three ha of grassland, were located.

The quantity of Rye Beetle Grass recorded at Deer Park is possibly one of the highest population densities recorded in Greater Melbourne (Fig. 1). During flora surveys (undertaken by the authors) of large areas of plains grassland west of Melbourne in 2007/08, the species was recorded from at least eight sites. Most populations averaged fewer than 200 plants, and many populations were restricted to fewer than 20 plants.



Fig. 1. Close up of Rye Beetle Grass *Tripogon loliiformis* in seed.



Fig. 2. A colony of Rye Beetle Grass *Tripogon loliiformis*.

Propagation

The salvaged plants from Deer Park were kept at the ABZECO nursery or distributed to Friends groups to allow reintroduction to suitable sites. The plants were potted into shallow trays, some with moss species and some without. The plants were kept in relatively dry conditions with occasional heavy watering, in an attempt to mimic the conditions of their natural habitat. In November 2009, it was noticed that seedlings of Rye Beetle Grass had germinated in some of the trays (Fig. 2). Interestingly, plants had germinated only around moss beds. To the best of our knowledge, this is the first time that Rye Beetle Grass has been propagated in nursery conditions.

Conclusions

Rye Beetle Grass is under threat from land development, rock removal, stock grazing and

other threatening processes. The main distribution of the species in Victoria lies within the urban growth boundary and the species is threatened by land development. Consultants should be wary when assessing rocky, basalt grasslands, as there is a high possibility that the species may be present. Advice should be sought on identification to ensure that the species is not overlooked.

Acknowledgements

The authors would like to thank Richard Francis for supplying some of the ecology and recruitment information, and Jack Latti, Gareth Cook, Bradley Jenner, Jake Urlus and Katherine Whittaker for locating Rye Beetle Grass plants during the salvage operation.

References

- Walsh NG and Entwistle TJ (1992) *Flora of Victoria. Vol 2, Ferns and Allied Plants, Conifers and Monocotyledons.* (Inkata Press: Chatswood, NSW)

Karl Just¹ and Nicholas Evans²

¹Applied Botany, Zoology and Ecological Consulting (ABZECO) 1 / 4 Brisbane Street, Eltham Victoria 3095

²Plant Ecology Research Unit, Deakin University
221 Burwood Highway, Burwood Victoria 3125



Fig. 3. Rye Beetle Grass *Tripogon loliiformis* forming the lower layer in a structurally interesting grassland near Alice Springs.